**Details on Mother and baby trials – Malawi 2016/17 cropping season protocols**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **District** | **Action sites (EPA)** | **Action groups** | **Mother trial host farmer** | **Maize varieties used** | **Cowpea** | **Pigeon pea** | **Groundnut** | **Soybean** |
| Dedza | Linthipe | Mother trial A(39) | Alfred Jason | DKC 8033 | Sudan 1 | Mthawajuni | Nsinjiro | Makwacha |
| Mother trial B(38) -old | ChiyembekezoChayera | DKC 8033 | Sudan 1 | Mthawajuni | Nsinjiro | Makwacha |
| C -new | YasiniAsima | DKC 8033 | Sudan 1 | Mthawajuni | Nsinjiro | Makwacha |
| D -new | JestonKoloneliyo | DKC 8033 | Sudan 1 | Mthawajuni | Nsinjiro | Makwacha |
| Golomoti | Mother trial A(55) | Benedict Damson | DKC 8033 | Sudan 1 | Mthawajuni | JL24 | Makwacha |
| Mother trial B(52) | Josephine Pindu | DKC 8033 | Sudan 1 | Mthawajuni | JL24 | Makwacha |
| D -new | Samson Damisolo | DKC 8033 | Sudan 1 | Mthawajuni | JL24 | Makwacha |
| Ntcheu | Kandeu | Mother trial A(97) | Green Charlie | DKC 8033 | Sudan 1 | Mthawajuni | Nsinjiro | Makwacha |
| Mother trial B(90) | Florence Otile | DKC 8033 | Sudan 1 | Mthawajuni | Nsinjiro | Makwacha |
| C-new | Gladys Waya | DKC 8033 | Sudan 1 | Mthawajuni | Nsinjiro | Makwacha |
|  | D-new | PaulosiPhonya | DKC 8033 | Sudan 1 | Mthawajuni | Nsinjiro | Makwacha |
| Nsipe | Mother trial A(39) | Peter Msowoya | DKC 8033 | Sudan 1 | Mthawajuni | Nsinjiro | Makwacha |
| B-new | Eliza Mandala | DKC 8033 | Sudan 1 | Mthawajuni | Nsinjiro | Makwacha |
| C - new | Dina Jezimani | DKC 8033 | Sudan 1 | Mthawajuni | Nsinjiro | Makwacha |
| D -new | Grace Chilemba | DKC 8033 | Sudan 1 | Mthawajuni | Nsinjiro | Makwacha |

**Mother trial treatment structure**

1. Maize control – no nutrients added
2. Maize fertilized with NPK compound (23-21-0) at 100 kg/ha at planting + top dressing urea at 100 kg/ha [**FULL rate**]
3. Maize fertilized with NPK compound (23-21-0) at 100 kg/ha + compost or manure (3-5 t/ha) at planting + top dressing urea at 100 kg/ha [**FULL rate**]
4. Groundnut fertilized with NPK at 50 kg/ha only [**HALF rate**]
5. Soybean fertilized with NPK at 50 kg/ha only [**HALF rate**]
6. Cowpeafertilized with NPK at 50 kg/ha only [**HALF rate**]
7. Pigeon peafertilized with NPK at 50 kg/ha only [**HALF rate**]
8. Maize/pigeon pea intercrop fertilized with NPK compound (23-21-0) at 100 kg/ha at planting + top dressing urea at 100 kg/ha [**FULL rate**]
9. Maize/field bean intercrop fertilized with NPK compound (23-21-0) at 100 kg/ha at planting + top dressing urea at 100 kg/ha [**FULL**
10. Doubled-up legumes A: Pigeon pea/groundnutintercrop fertilized with NPK at 50 kg/ha only [**HALF rate**]
11. Doubled-up legumes B: Pigeon pea/soybean intercrop fertilized with NPK at 50 kg/ha only [**HALF rate**]
12. Doubled-up legumes C: Pigeon pea/cowpea intercrop fertilized with NPK at 50 kg/ha only [**HALF rate**]
13. Doubled-up legumes D: Groundnut/cowpea intercrop fertilized with NPK at 50 kg/ha only [**HALF rate**]

Notes

* + Treatments replicated 3 times
  + Control of aphids in cowpea plots will be prioritized with dimethoate

**Baby trial formulation and management**

1. Action groups were formulated around each of the 8 mother trials, resulting in 2 action groups per intervention site
2. Action groups comprised of at least 40 farmers, who actively participated in the establishment of the mother trials.
3. Action group members subsequently established baby trials based on the following rules:
   1. No more than 4 treatments were to be selected from the mother trial they had established, with each treatment having minimum plot dimension of 10 m x 10 m
   2. Two treatments were mandatory
      1. Fertilized maize plot - farmers were not given any fertilizer – they had to source using own resources, including fertilizers from the subsidy program
      2. Doubled-up legume: selection from any of those included in the mother trial
4. Those baby trial farmers with a cowpea component had to liaise closely with their local AEDO to control aphids that were inevitable with dimethoate. In some areas, some farmers indicated that they would also use tephrosia for aphid control, which has proved to be an effective alternative method
5. In one of the sites, farmers did not accept sole pigeon pea as a treatment – they reckon thatwhenever they grow pigeon pea, it has to be intercropped with maize

**Fertilizer management and rational**

* For maize **FULL rate**fertilizer application, 100 kg/ha NPK (23-21-0) applied at planting provides 23 kg/ha N, 9.2 kg/ha P, as well as some sulphur
* 100 kg/ ha urea (46% N) – applied 3-5 weeks after crop emergence – this depended on soil moisture availability within this window provides 46 kg/ha N (we have withheld an additional urea application so the rate of N does not exceed 100 kg/ha),
* Therefore **FULL rate** fertilizer regime provides about 9 kg/ha P and (23+46) =69 kg/ha N. An additional 50 kg of urea would have resulted in 92 kg/ha N
* Doubled up or sole legumes fertilized with**HALF rate** basal fertilizer only receive about 12 kg/ha N and 4.6 kg/ha P to start up the system. This fertilizer would normally be not necessary on medium to fertile soils for legumes, but the P could be critical on poor soils so as to stimulate legume productivity. Farmers rarely apply any fertilizer to legumes. We were therefore sensitive to this as no farmers were asked to apply any fertilizer to their grain legume plots in the baby trials.
* Intercropping of maize with grain legumes does not result in any substantial transfer of N generated by the legumes to the maize within the cropping period – unless the legume is of such a short duration that the senesced legume leaves decompose/mineralize and provide a source of N to the maize. Thus the maize would normally require FULL fertilization during the first year. In year two, we can benefit from the residue N and thus we can start reducing the fertilizer rate in the rotational systems.

**Other agronomic practices**

**Ridge spacing**

By the time the mother trials sites were selected (October/November, 2013), farmers had already made ridges, that often have a variable inter-ridge spacing of 75-100 cm. For the selected mother trials sites, whenever the inter-ridge spacing was too far off the desirable 60-75 cm, the ridges were reformulated. All crops were grown on similar ridges, but with different in-row spacing as indicated below

* **Maize** – seeding at 25 cm within row spacing for a potential plant population of about 53,000 plants/ha.
* **Pigeon pea:** within row spacing of 90 cm, with 3 plants per planting station
* **Maize/pigeon pea intercrop**: When intercropped with pigeon pea, 3 plants of maize per station at 90 cm spacing in-row. Also 3 plants per station of pp at 90 cm inrow (within same row)
* **Groundnut:** within row/ridge spacing of 10-15 cm. Two rows of groundnut were adopted in cases were ridges were large enough to accommodate this. Planting on thin ridges that cannot accommodate 2 rows is a structural problem that has results in low groundnut plant populations and productivity. If seed is scarce/expensive (as is certified groundnut seed) and the objective is to get the most out of each plant, then this could still be reasonable.
* **Soybean:** within row/ridge spacing of 5-8 cm.
* **Pigeon pea-groundnut/soya/cowpea intercrops**: Pigeon pea population largely maintained as per sole cropping. Other legumes planted in the space between the pigeon pea plants.

**Linthipe EPA(YEAR 5)**

**Farmer: ChiyembekezoChayera LINTHIPE**

1. Maize– control

2. Maize NPK compound (69 N, 21 P) 2 bags each for NPK and urea

3. Maize + NPK + Compost +urea FULL rate

4. Groundnut

5. Soya bean only

6. Cowpea only

7. Pigeon pea / maize intercrop

8. Pigeon / groundnut doubled up

9. PP/cowpea doubled up

10. PP/soyabean doubled up

11. Maize / beans intercrop

12. Maize half rate (there was soya last year)

***Plots 13-16 will have maize at halfrate in 2016/17 as they had legumes***

13. pp+groundnut

14. Cowpea

15. Groundnut

16. pp+soya

**BLOCK 1 (ROAD here to LOBI**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 6 | 4 | 1 | 7 | 3 | 11 | 13 | 14 |
| 2 | 10 | 8 | 5 | 9 | 12 | 15 | 16 |

**BLOCK 2**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 6 | 4 | 1 | 7 | 3 | 11 | 13 | 14 |
| 2 | 10 | 8 | 5 | 9 | 12 | 15 | 16 |

**BLOCK 3**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 6 | 4 | 1 | 7 | 3 | 11 | 13 | 14 |
| 2 | 10 | 8 | 5 | 9 | 12 | 15 | 16 |

**Linthipe EPAYEAR 5**

**Farmer: Alfred Jason**

1.Maize control

2. Maize NPK compound (69 N, 21 P) 2 bags each for NPK and urea

3. Maize + NPK + Compost

4. Groundnut

5. Soya bean only \_Makwacha

6. Cowpea only

7. Pigeon pea / maize intercrop (maintained pp/maize intercrop)

8. Pigeon / groundnut doubled up

9. Pigeonpea

10. PP/cowpea doubled up

11. Maize / beans intercrop

12. PP/soya

**BLOCK 1**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 6 | 4 | 3 | 7 | 1 | 11 |
| 2 | 5 | 8 | 9 | 10 | 12 |

**BLOCK 2**

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| --- | --- | --- | --- | --- | --- |
| 6 | 4 | 3 | 7 | 1 | 11 |
| 2 | 5 | 8 | 9 | 10 | 12 |

**BLOCK 3**

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| --- | --- | --- | --- | --- | --- |
| 6 | 4 | 3 | 7 | 1 | 11 |
| 2 | 5 | 8 | 9 | 10 | 12 |

**Farmer: YasiniAsimaLinthipe (YEAR 1)**

1. Maize control–PAN53

2. Maize NPK compound (69 N, 21 P) 2 bags each for NPK and urea

3. Maize + NPK + Compost +urea FULL rate

4. Groundnut

5. Soya bean only \_Makwacha

6. Cowpea only

7. Pigeon pea / maize intercrop

8. Pigeon / groundnut doubled up

9. Pigeon pea + cowpeadoubled up

10. Groundnut/maize intercrop

**BLOCK 1**

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| --- | --- | --- | --- | --- |
| 6 | 4 | 1 | 7 | 3 |
| 2 | 10 | 8 | 5 | 9 |

**BLOCK 2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 6 | 4 | 1 | 7 | 3 |
| 2 | 10 | 8 | 5 | 9 |

**BLOCK 3**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 6 | 4 | 1 | 7 | 3 |
| 2 | 10 | 8 | 5 | 9 |

**Farmer: JestonKoloneliyo (YEAR 1)**

1. Maize control–PAN53

2. Maize NPK compound (69 N, 21 P) 2 bags each for NPK and urea

3. Maize + NPK + Compost +urea FULL rate

4. Groundnut

5. Soya bean only \_Makwacha

6. Cowpea only

7. Pigeon pea / maize intercrop

8. Pigeon / groundnut doubled up

**BLOCK 1**

|  |  |  |  |
| --- | --- | --- | --- |
| 6 | 4 | 1 | 7 |
| 2 | 3 | 8 | 5 |

**BLOCK 2**

|  |  |  |  |
| --- | --- | --- | --- |
| 6 | 4 | 1 | 7 |
| 2 | 3 | 8 | 5 |

**BLOCK 3**

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| --- | --- | --- | --- |
| 6 | 4 | 1 | 7 |
| 2 | 3 | 8 | 5 |

**Golomoti EPA**

**Farmer:** Benedict Damson - Kalumo Village**(YEAR 4) all maize this year except 7**

1. Maize control

2. Maize + NPK (Full Rate) (69N, 21P)

3. Maize + NPK + Compost / manure (Full rate)

4. Groundnut

5. Soya bean

6. Cowpea

7. Maize / Pigeon pea intercrop

8. Pigeon pea/ groundnut

9. Pigeon pea + cowpea Doubled-up legumes

10. Pigeon pea / Soya bean

**BLOCK 1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5 | 3 | 2 | 9 | 7 |
| 1 | 10 | 8 | 6 | 4 |

**BLOCK 2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5 | 3 | 2 | 9 | 7 |
| 1 | 10 | 8 | 6 | 4 |

**BLOCK 3**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5 | 3 | 2 | 9 | 7 |
| 1 | 10 | 8 | 6 | 4 |

**Golomoti EPA**

**Farmer: Josephine Pindu (YEAR 5)**

1. Maize control

2. Maize + NPK (Full Rate) (69N, 21P)

3. Maize + NPK + Compost / manure (Full rate)

4. Groundnut

5. Soya bean

6. Cowpea

7. Maize / Pigeon pea intercrop

8. Pigeon pea/ groundnut

9. PP + cowpea Doubled-up legumes

10. Pigeon pea / Soya bean

*11-14 will have maize during 2016/17 season at half rate*

11. pigeon pea/groundnut

12. Soyabean

13. Cowpea

14.Groundnut

**BLOCK 1**

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| --- | --- | --- | --- | --- | --- | --- |
| 5 | 3 | 2 | 9 | 7 | 11 | 13 |
| 1 | 10 | 8 | 6 | 4 | 12 | 14 |

**BLOCK 2**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 5 | 3 | 2 | 9 | 7 | 11 | 13 |
| 1 | 10 | 8 | 6 | 4 | 12 | 14 |

**BLOCK 3**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 5 | 3 | 2 | 9 | 7 | 11 | 13 |
| 1 | 10 | 8 | 6 | 4 | 12 | 14 |

**Golomoti EPA**

**Farmer:** Samson Damiloko**(Year 4 all maize except 7)**

1. Maize control

2. Maize + NPK (Full Rate) (69N, 21P)

3. Maize + NPK + Compost / manure (Full rate)

4. Groundnut

5. Soya bean

6. Cowpea

7. Maize / Pigeon pea intercrop

8. Pigeon pea/ groundnut

9. Pigeon pea + cowpea Doubled-up legumes

10. Pigeon pea / Soya bean

**BLOCK 3**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5 | 3 | 2 | 9 | 7 |
| 1 | 10 | 8 | 6 | 4 |

**BLOCK 2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5 | 3 | 2 | 9 | 7 |
| 1 | 10 | 8 | 6 | 4 |

**BLOCK 1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5 | 3 | 2 | 9 | 7 |
| 1 | 10 | 8 | 6 | 4 |

**Kandeu EPA –Kampanje**

**Farmer: Green Charlie (YEAR 5)**

Treatments

1. Maize control

2. Maize + NPK (full rate)

3. Maize + NPK + Compost / Manure

4. Groundnut

5. Soyabean

6. Cowpea

½ rate NPK (all legumes single or doubled -up

7. Pigeon pea

8. Pigeon + groundnut

9. Pigeon + soyabean

10. Maize + Cowpea

11. Maize/ Pigeon pea

12. Maize half rate as there was soya during 2015/16

**BLOCK 1**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 8 | 7 | 3 | 9 | 4 | 5 |
| 10 | 1 | 6 | 12 | 2 | 11 |

**BLOCK 2**

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| --- | --- | --- | --- | --- | --- |
| 8 | 7 | 3 | 9 | 4 | 5 |
| 10 | 1 | 6 | 12 | 2 | 11 |

**BLOCK 3**

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| 8 | 7 | 3 | 9 | 4 | 5 |
| 10 | 1 | 6 | 12 | 2 | 11 |

**Kandeu \_Kampanje:**

**Farmer: Florence Otile (YEAR 5)**

Treatments

1. Maize control

2. Maize + NPK (full rate)

3. Maize + NPK + Compost / Manure

4. Groundnut

5. Soybean

6. Pigeon pea

7. Maize + pigeon pea

8. Pigeon pea + groundnut

9. Pigeon pea + soybean

10. Maize + Cowpea

**BLOCK 1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | 8 | 6 | 9 | 10 |
| 4 | 7 | 5 | 3 | 2 |

**BLOCK2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | 8 | 6 | 9 | 10 |
| 4 | 7 | 5 | 3 | 2 |

**BLOCK 3**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | 8 | 6 | 9 | 10 |
| 4 | 7 | 5 | 3 | 2 |

**Kandeu EPA –Kampanje:**

**Farmer: Gladys Waya (close to the bridge)– Year 4 all except 11**

Treatments

1. Maize control

2. Maize + NPK (full rate)

3. Maize + NPK + Compost / Manure

4. Groundnut

5. Soyabean

6. Cowpea

½ rate NPK (all legumes single or doubled -up

7. Pigeon pea

8. Pigeon + groundnut

9. Pigeon + soyabean

10. Maize + Cowpea

11. Maize/ Pigeon pea

½rate NPK

12. Pigeon pea/cowpea

**BLOCK 1**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 8 | 7 | 3 | 9 | 4 | 5 |
| 10 | 1 | 6 | 12 | 2 | 11 |

**BLOCK 2**

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| --- | --- | --- | --- | --- | --- |
| 8 | 7 | 3 | 9 | 4 | 5 |
| 10 | 1 | 6 | 12 | 2 | 11 |

**BLOCK 3**

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| --- | --- | --- | --- | --- | --- |
| 8 | 7 | 3 | 9 | 4 | 5 |
| 10 | 1 | 6 | 12 | 2 | 11 |

**Kandeu \_Kampanje:**

**Farmer: PaulosiPhonya (Year 4 – all maize except 7)**

Treatments

1. Maize control

2. Maize + NPK (full rate)

3. Maize + NPK + Compost / Manure

4. Groundnut

5. Soyabean

6. Pigeon pea

7. Maize + pigeon pea

8. Pigeon pea + groundnut

9. Pigeon pea + soyabean

10. Maize + Cowpea

**BLOCK 1**

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| --- | --- | --- | --- | --- |
| 1 | 8 | 6 | 9 | 10 |
| 4 | 7 | 5 | 3 | 2 |

**BLOCK2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | 8 | 6 | 9 | 10 |
| 4 | 7 | 5 | 3 | 2 |

**BLOCK 3**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | 8 | 6 | 9 | 10 |
| 4 | 7 | 5 | 3 | 2 |

**NSIPE EPA**

**Farmer:Peter Msowoya(YEAR 5)**

1. Maize control

2. Maize + NPK (FullRate) (69N, 21P2O5)

3. Maize + NPK + Compost / manure (Full rate)

4. Groundnut ½ rate

5. Soya bean ½ rate

6. Cowpea ½ rate

7. Pigeon pea ½ rate

8. Pigeon pea/ groundnut ½ rate

9. Pigeon pea / soya bean ½ rate

10. Maize / cowpea (NPK) Full rate

11. Maize / pigeon pea

12. Maize at half rate - had soya last year

***13-14 will be under maize this year***

13. Pigeon pea + groundnut

14. Groundnut

**BLOCK 1**

|  |  |  |  |  |  |  |
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| 7 | 2 | 1 | 6 | 10 | 5 | 14 |
| 12 | 4 | 11 | 8 | 3 | 9 | 13 |

**BLOCK 2**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 7 | 2 | 1 | 6 | 10 | 5 | 14 |
| 12 | 4 | 11 | 8 | 3 | 9 | 13 |

**BLOCK 3**

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| --- | --- | --- | --- | --- | --- | --- |
| 7 | 2 | 1 | 6 | 10 | 5 | 14 |
| 12 | 4 | 11 | 8 | 3 | 9 | 13 |

**NSIPE EPA**

**Farmer:Eliza Mandala(Year 4- all maize except 11)**

1. Maize control

2. Maize + NPK (FullRate) (92N, 21P)

3. Maize + NPK + Compost / manure (Full rate)

4. Groundnut ½ rate

5. Soya bean ½ rate

6. Cowpea ½ rate

7. Pigeon pea ½ rate

8. Pigeon pea/ groundnut ½ rate

9. Pigeon pea / soya bean ½ rate

10. Maize / cowpea (NPK) Full rate

11. Maize / pigeonpea

12. Pigeon pea + cowpea

**BLOCK 1**

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| --- | --- | --- | --- | --- | --- |
| 7 | 3 | 8 | 5 | 4 | 9 |
| 12 | 10 | 6 | 1 | 2 | 11 |

**BLOCK 2**

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| --- | --- | --- | --- | --- | --- |
| 7 | 3 | 8 | 5 | 4 | 9 |
| 12 | 10 | 6 | 1 | 2 | 11 |

**BLOCK 3**

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| 7 | 3 | 8 | 5 | 4 | 9 |
| 12 | 10 | 6 | 1 | 2 | 11 |

**NSIPE EPA**

**Farmer:Dina Jezimani(Year 4 all maize except 11)**

1. Maize control

2. Maize + NPK (FullRate) (92N, 21P)

3. Maize + NPK + Compost / manure (Full rate)

4. Groundnut ½ rate

5. Soya bean ½ rate

6. Cowpea ½ rate

7. Pigeon pea ½ rate

8. Pigeon pea/ groundnut ½ rate

9. Pigeon pea / soya bean ½ rate

10. Maize / cowpea (NPK) Full rate

11. Maize / pigeonpea

12. Pigeon pea + cowpea

**BLOCK 1**

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| --- | --- | --- | --- | --- | --- |
| 7 | 2 | 1 | 6 | 10 | 5 |
| 12 | 4 | 11 | 8 | 3 | 9 |

**BLOCK 2**

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| --- | --- | --- | --- | --- | --- |
| 7 | 2 | 1 | 6 | 10 | 5 |
| 12 | 4 | 11 | 8 | 3 | 9 |

**BLOCK 3**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7 | 2 | 1 | 6 | 10 | 5 |
| 12 | 4 | 11 | 8 | 3 | 9 |

**NSIPE EPA**

**Farmer: Grace Chilemba(Year 4 all maize except 11)**

1. Maize control

2. Maize + NPK ( Full Rate ) (92N, 21P)

3. Maize + NPK + Compost / manure (Full rate)

4. Groundnut ½ rate

5. Soya bean ½ rate

6. Cowpea ½ rate

7. Pigeon pea ½ rate

8. Pigeon pea/ groundnut ½ rate

9. Pigeon pea / soya bean ½ rate

10. Maize / cowpea (NPK) Full rate

11. Maize / pigeonpea

12. Pigeon pea + cowpea

**BLOCK 1**

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| --- | --- | --- | --- | --- | --- |
| 7 | 2 | 1 | 6 | 10 | 5 |
| 12 | 4 | 11 | 8 | 3 | 9 |

**BLOCK 2**

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| --- | --- | --- | --- | --- | --- |
| 7 | 2 | 1 | 6 | 10 | 5 |
| 12 | 4 | 11 | 8 | 3 | 9 |

**BLOCK 3**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7 | 2 | 1 | 6 | 10 | 5 |
| 12 | 4 | 11 | 8 | 3 | 9 |